

U.S. Serial No. 10/681,979 (Attorney Dkt: HALB:023D1)
Art Unit: 1712

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

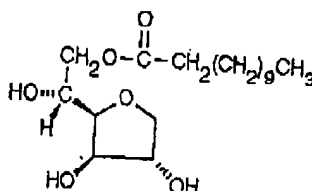
1 claim:

1. -12. Canceled.
13. (Currently amended) A drilling fluid comprising a polar base oil and complimentary surfactants blended or combined such that said surfactants form micelles ~~having-in~~ quantities providing a staggered arrangement and denser concentration in the palisade layer of said fluid than either surfactant would have form alone, such that said drilling fluid has sufficient electrical conductivity to facilitate resistance-based wellbore logging while also having utility as an oil-based drilling fluid.
14. (Original) The drilling fluid of claim 13 wherein said polar base oil is a synthetic ester based oil.
15. (Original) The drilling fluid of claim 13 wherein said base oil and surfactants comprise the oil based layer of an invert emulsion.
16. (Original) The drilling fluid of claim 15 wherein said base oil and said surfactants comprise about 90 volume percent of said emulsion.
17. (Original) The drilling fluid of claim 16 wherein calcium chloride brine comprises the water phase of said emulsion.
18. (Original) The drilling fluid of claim 17 wherein said surfactants are fatty acid surfactants.
19. (Original) The drilling fluid of claim 13 further comprising a fluid loss additive.

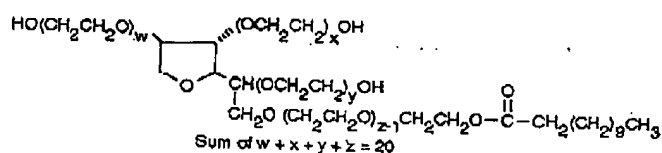
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20. (Original) The drilling fluid of claim 19 wherein said fluid loss additive is selected from the group comprising: oleic acid; quaternary ammonium compounds; calcium carbonates; styrene butadiene; and combinations thereof.
- 21.- 25. Canceled.
26. (Previously presented) ~~An electrically conductive~~ A drilling fluid comprising a polar ester oil-base, a sorbitan ester derivative surfactant, and an ethoxylated sorbitan ester derivative surfactant, wherein said surfactants are in quantities sufficient to create micelles having enhanced concentration in the palisade layer in an arrangement that imparts electrical conductivity to said drilling fluid.
27. (Currently amended) The drilling fluid of claim ~~26~~ 34 wherein said micelles in the palisade layer are packed sufficiently close to yield a rigid surfactant film.
28. (Currently amended) The drilling fluid of claim ~~26~~ 34 wherein said fluid is prepared by formulating an invert emulsion comprising said base oil to which is added said ethoxylated sorbitan ester derivative followed by said sorbitan ester derivative.
29. (Previously presented) The drilling fluid of claim 28 wherein said emulsion comprises about 85 to about 95 volume percent ester and about 5 to about 15 volume percent brine.
30. (Previously presented) The drilling fluid of claim 29 wherein said volume percent ester comprises said ester base oil, said sorbitan ester derivative, and said ethoxylated sorbitan ester derivative.
31. (Currently amended) The drilling fluid of claim ~~26~~ 34 wherein said sorbitan ester has the formula:

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32. (Currently amended) The drilling fluid of claim 26 34 wherein said ethoxylated sorbitan ester has a formula the same as or similar to:



33. (Currently amended) The drilling fluid of claim 26 34 wherein said sorbitan ester derivative and said ethoxylated sorbitan ester derivative are complimentary.
34. (Currently amended) ~~The drilling fluid of claim 26~~ An electrically conductive drilling fluid comprising a polar ester oil-base, a sorbitan ester derivative surfactant, and an ethoxylated sorbitan ester derivative surfactant, wherein said surfactants are in quantities sufficient to create micelles having enhanced concentration in the palisade layer, and wherein said polar ester oil-base comprises a monocarboxylic acid ester of a C_2 to C_{17} monofunctional alkanol.
35. (Canceled)
36. (Currently amended) The drilling fluid of claim ~~35~~ 18 wherein at least one of said complimentary fatty acid surfactants is more water soluble than another and at least one of the complimentary fatty acid surfactants is more oil soluble than another.
37. (Currently amended) The drilling fluid of claim ~~35~~ 36 wherein said complimentary fatty acid surfactants are selected from the group consisting of sorbitan esters, sorbitan ester

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derivatives, ethoxylated sorbitan esters, ethoxylated sorbitan ester derivatives, and combinations thereof.

38. (Currently amended) An oil-based drilling fluid having complimentary surfactants prepared to that effect sufficient electrical conductivity through an enhanced concentration and staggered arrangement of their micelles at the palisade layer to facilitate resistance-based logging, said preparation comprising first preparing an invert emulsion with said oil base, said oil base comprising a polar ester, and then adding to said base a first surfactant that flips the emulsion to exhibit water-external properties followed by a second surfactant complimentary to said first surfactant that re-inverts the emulsion.
39. (Canceled)
40. (Previously presented) The drilling fluid of claim 38 wherein said fluid effects said electrical conductivity over a broad temperature range.
41. (Canceled)